

[New Patent Claim 35]

8955.4 PT-EP
Faist Automotive ...
HJM/Nj

New Patent Claim 35

Method according to Claim 34, characterised in that distortions of said perforations (2) in said panel (1) or layer are closed by pressing, at least in part, by shaping rollers.

Ende der Übersetzung/End of Translation

Translator's Remarks:

Expressions typed in a different small-size font in italics have been added by the translator.

Als vom Präsidenten des Landgerichts München I öffentlich bestellter und allgemein beeidigter Übersetzer für die englische Sprache bestätige ich: vorstehende Übersetzung der mir in Anwaltskopie vorgelegten und in deutscher Sprache abgefassten internationalen Patentanmeldung PCT WO 00/68039 (EP 000003634), veröffentlicht am 16. November 2000, mit den Austauschseiten 1 und 2, den Ansprüchen 1 bis 34 als Austausch und dem neuen Anspruch 35, mit dem Titel "Schallabschirmelement, Verwendung desselben und Verfahren zu dessen Herstellung", ist richtig und vollständig.

Ausgefertigt in 1 Original.

München, den 9. April 2001

Made out in 1 original copy.

Antje KOPP
Richard-Strauss-Strasse 56/IV
D-81677 Muenchen
Federal Republic of Germany



Text of the Claims

1. Sound shielding element for protection from the propagation of sound from the noise area of a room or space into a neighbouring room or space, comprising at least one panel (1) or layer, respectively, including many small perforations (2),
characterised by the following dimensioning:
- a. the thickness (d) of said panel (1) or layer, respectively, ranges between 0.01 and 50 mm;
 - b. the average diameter (D) or the width (b) of said perforations (2) ranges between 0.001 and 2 mm;
 - c. the hole/surface ratio (LV) (average surface part (LF) of said perforations (2) of the total area (GF) of said panel (1) or layer) ranges between 0.001 and 20 %.
2. Sound shielding element for covering sound-reflecting and/or generating structural parts, comprising at least one panel (1) or layer including many small perforations (2),
characterised by the following dimensioning:
- a. the thickness (d) of said panel (1) or layer, respectively, ranges between 0.01 and 50 mm;
 - b. the average diameter (D) or the width (b) of said

- perforations (2) ranges between 0.001 and 2 mm;
- c. the hole/surface ratio (LV) (average surface part (LF) of said perforations (2) of the total area (GF) of said panel (1) or layer) ranges between 0.001 and 20 %.
3. Sound shielding element according to Claim 1 or 2,
characterised in
that said panel (1) has a thickness (d) between 0.05 and 4 mm, an average diameter (D) or an average width (b) between 0.01 and 0.7 mm and a hole/surface ratio (LV) between 0.01 and 5 %.
4. Sound shielding element according to any of the preceding Claims,
characterised in
that perforations (2) are configured as circular holes.
5. Sound shielding element according to any of the preceding Claims,
characterised in
that perforations (2) are configured as narrow or fine slots, respectively, having a width (b) between 0.02 and 0.18 mm and a length (l) between 0.02 and 30 mm.
6. Sound shielding element according to Claim 5,
characterised in
that said slots have a width (b) between 0.08 and 0.15 mm and a slot length (l) between 0.8 and 2.2 mm and are disposed at an offset at a spacing (a_1) transversely to their longitudinal extension by less than half the slot length (l).

7. Sound shielding element according to any of the preceding Claims,
characterised in
that said panel (1) is configured as three-dimensionally shaped moulded part.
8. Sound shielding element according to Claim 7,
characterised in
that said panel (1) or layer is injection-moulded or pressed from synthetic material.
9. Sound shielding element according to any of the Claims 1 to 6,
characterised in
that said panel (1) or layer is three-dimensionally shaped without cutting.
10. Sound shielding element according to Claim 8,
characterised in
that said panel (1) or layer is shaped without cutting by stretching.
11. Sound shielding element according to Claim 10,
characterised in
that said panel (1) or layer consists of expanded metal.
12. Sound shielding element according to any of the preceding Claims,
characterised in
that said panel (1) or layer is shaped by rolling.

13. Sound shielding element according to any of the preceding Claims,
characterised in
that said panel (1) or layer has a good thermal conductivity and consists of aluminium or an aluminium alloy.
14. Sound shielding element according to any of the preceding Claims,
characterised in
that said panel (1) or layer is deep-drawn from a plane plate, board, tape, strip or sheet.
15. Sound shielding element according to any of the preceding Claims,
characterised in
that said panel (1) or layer, respectively, consists of polypropylene (PP).
16. Sound shielding element according to any of the preceding Claims,
characterised in
that the hole/surface ratio (LV) ranges between 0.2 % and 5 %.
17. Sound shielding element according to any of the Claims 6-16,
characterised in
that said moulded part has a thickness (d) between 0.05 and 4 mm, particularly between 0.2 and 1 mm.
18. Sound shielding element according to any of the preceding Claims,
characterised in

that said panel (1) or layer is provided with perforations (2) in a sieve-like or raster-like form.

19. Sound shielding element according to any of the preceding Claims,

characterised in

that said panel (1) or layer consists of aluminium, steel sheet, ceramic or a highly temperature-resistant synthetic material.

20. Sound shielding element according to any of the preceding Claims,

characterised in

that said panel (1) or layer serves as carrier of a porous covering layer.

21. Sound shielding element according to Claim 20,

characterised in

that said porous covering layer consists of a foamed synthetic material.

22. Sound shielding element according to Claim 20,

characterised in

that said layer consists of a nonwoven fabric.

23. Sound shielding element according to any of the preceding Claims,

characterised in

that said layer consists of a textile material.

23. Sound shielding element according to any of the Claims 20-23,

characterised in

that said covering layer is disposed at that side of said

panel (1) or layer turned away from the incidence of sound.

25. Sound shielding element according to any of the preceding Claims,

characterised in

that said panel (1) or layer is used as covering layer on a sound-absorbing layer consisting, for instance, of a non-woven fabric or foamed material or on a chamber-type or membrane-type absorber, and presents a hole/surface ratio between 3 and 10 % and an average hole diameter between 0.1 and 0.5 mm.

26. Application of the sound shielding element according to any of the preceding Claims as injection-moulded operating element.
27. Application of the sound shielding element according to any of the Claims 1 to 25 as roof lining in the passenger compartment of motor vehicles.
28. Application of the sound shielding element according to any of the Claims 1 to 25 on the underbody lining of motor vehicles.
29. Application of the sound shielding element according to any of the Claims 1 to 25 as injection-moulded cover unit for covering cables and the like.
30. Application of the sound shielding element according to any of the Claims 1 to 25 as wheel case shell on motor vehicles.
31. Application of the sound shielding element according to any of the Claims 1 to 25 as thermal shielding element in the

region of the exhaust gas system of internal combustion engines, particularly in motor vehicles.

32. Application of the sound shielding element according to any of the Claims 1 to 25 as hat rack in motor vehicles.
33. Application of the sound shielding element according to any of the Claims 1 to 25 as seat cover in motor vehicles.
34. Application of the sound shielding element according to any of the Claims 1 to 25 as door lining.
35. Application of the sound shielding element according to any of the Claims 1 to 25 as absorbing tube for the exhaust gas system, for the ventilation system or any other air-conducting tubes.
36. Application of the sound shielding element according to any of the Claims 1 to 25 as decorative wheel shield.
37. Application of the sound shielding element according to any of the Claims 1 to 25 as engine bonnet lining of motor vehicles.
38. Application of the sound shielding element according to any of the Claims 1 to 25 as cover for covering at least one part of an internal combustion engine.
39. Application of the sound shielding element according to any of the Claims 1 to 25 as luggage trunk cover, e.g. in the form of a blind.

40. Application of the sound shielding element according to any of the Claims 1 to 25 as thermal protector shield.
41. Application of the sound shielding element according to any of the Claims 1 to 25 as covering layer on honey-comb composite panels.
42. Application of the sound shielding element according to any of the Claims 1 to 25 in combination with further panels (1) that are spaced from each other and disposed in a substantially parallel arrangement.
43. Method of producing a sound shielding element according to any of the Claims 1 to 25,
characterised in
that said panel (1) or layer is produced by injection moulding.
44. Method of producing a sound shielding element according to any of the Claims 1 to 25,
characterised in
that said panel (1) or layer is produced by fusing or bonding particles.
45. Method of producing a sound shielding element according to any of the Claims 1 to 25,
characterised in
that said panel (1) or layer is produced by pressing, bonding or fusing fibres.
46. Method of producing a sound shielding element according to any of the Claims 1 to 25,

- 27 -

51. Method of producing a sound shielding element according to any of the Claims 1 to 25,
characterised in
that a textile fabric is impregnated with a thermoplastic material and moulded to assume a three-dimensional shape.

.../Page 28 of 38 pages

[illegible]

characterised in

that said perforated panel (1) or layer is produced by weaving threads formed of fibres.

47. Method of producing a sound shielding element according to any of the Claims 1 to 25,

characterised in

that perforations (2) in said panel (1) or layer are produced by drilling with a laser beam.

48. Method of producing a sound shielding element according to any of the Claims 1 to 25,

characterised in

that perforations (2) in said panel (1) or layer are produced by electric discharges using an electric arc through said panel (1) or layer, respectively.

49. Method of producing a sound shielding element according to any of the Claims 1 to 25,

characterised in

that perforations (2) in said panel (1) or layer are produced by bombardment of the latter with particles.

50. Method of producing a sound shielding element according to any of the Claims 1 to 25,

characterised in

that perforations (2) in said panel (1) or layer are produced by means of needle or cutter blocks and/or needle- or cutter-carrying boards.